Tonwell St Mary's School Curriculum Overview of Intent for Design and Technology

Overall aims:

We aim to ensure all children have the knowledge, understanding and skills to engage in the process of designing, making and evaluating products. Our long-term aim is to enable our children to grow into enterprising citizens who can use problem-solving and creativity in their everyday lives, and possibly in their professional roles.

Our unique context:

Due to the unique context of our school with mixed-age classes and rolling programmes of study, we have organised our curriculum for Design and Technology in the following ways:

From the Early Years, our children are given opportunities to explore problems solving and develop their creativity. They are involved in simple product design, making and evaluating. Children grow their own vegetables in the outside area and cook regularly.

The curriculum in KS1 and 2 is organised so that they use all four components: design, make , evaluate and technical knowledge, termly. We ensure a balance of construction/materials/textiles across the year. There is a focus on cooking and nutrition at least annually. Links are made through our Forest School and Harvest Festival for children to learn about seasonality and 'growing their own'.

We use our Friends of Tonwell Summer Fair as a chance for KS2 children to develop an understanding of enterprise, with children organising products for their own stall to make money for school funds.

Tonwell Ten: design, evaluate, research, make, materials, equipment, construct, structure, investigate, analyse

	Autumn Term		Spring Term		Summer Term	
EYFS Years A & B	How can I design and build a bridge to save Sita? What makes a healthy dessert? (Handas Surprise – fruit salad making) Which ingredients,	What makes a good Christmas decoration? How can I research, design, make and evaluate my own Christmas decoration? Which ingredients, methods and	Based on child-led topic.	What makes a good Easter bonnet? How can I research, design, make and evaluate it? Which ingredients, methods and technologies are used to bake Easter buns?	Based on child-led topic.	Which materials and shapes make the best boats?

	methods and technologies are used to bake bread? (Harvest)	technologies are used to bake gingerbread?				
	Research, design, make, evaluate, bridge, stability, materials, techniques, cooking, healthy, fruits, bread, baking, ingredients, methods, technology.	**Research, design, make, evaluate,** shape, form, function, materials, ingredients, methods, technologies, Christmas decoration, baking, oven, mixing.		**Research, design, make, evaluate**, hat, bonnet, decoration, colours, fastenings, shape, form, function, **materials**, baking, ingredients, methods, technologies, oven, mixer, tools.		**Materials**, properties, float, sink, waterproof, flexible, stiff, hard, soft, smooth, joining, form, function, **research, design, make, evaluate**, shapes.
	Continuous Provision: Joining resources: masking tape, Sellotape, string, rope, PVA, glue sticks, split pins, treasury tags Tools: Pens, pencils, felt tips, colouring pencils, straight scissors, wiggly scissors, paints, water colours, brushes, water pots, pallets, clay tools, hole punch. Decorations: pom poms, feathers, sequins, glitter, pipe cleaners General resources: different sizes of paper, card, coloured paper, junk modelling boxes and bottles					
	• To safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and technology. • To recognise that a range of technology is used in places such as homes and schools. To select and use technology for particular purposes					
KS1 Year A		<u>Design a home</u> What story character could		<u>Design and make a fruit salad</u>		<u>Puppets and sewing</u> How can we make a glove puppet?

		we design a home for?		What fruits could we include in a fruit salad?		
		Structure, building, model, construct, home, house, tools, cut, join, assemble, material, fix, **structure,** strong, weak, stable, transparent, build, features, window, glass, wall, roof, door.		Design, choose, investigate, taste, arrange, **experiment,** popular, sort, wash, clean, peel, cut, slice, grate, salad, fruit, vegetables, flesh, skin, grater, chopping board, peeler, seeds, pips, stalk, juice, root, leaf, stone, bunch, crisp, sharp, juicy, sweet, sour, sticky, squashy, smooth, crunchy, scented, waxy		Design, label, draw, choose, decide, evaluate, plan, template, fabric, cutting out, sewing, needle, running stitch, gluing, adding, character, puppet, seam, stitch, thread, strong, quality, features, strengthen, position.
KS1 Year B	<u>Design and make a hot air balloon</u> How can we make a hot air balloon using papier-mache?	<u>Design and make a superhero mask</u> What materials can we use to make a mask for a superhero?				<u>Moving pictures</u> How can we make a picture come to life?
	Design, draw, label, join, fix, plan, scissors, glue, papier-mache, masking	**Design, evaluate**, predict, pin, pattern, join, cut, shape, measure, fabric, template,				**design**, discuss, choose, draw, label, hole punch, paper fastener, join, cut carefully, plan,

	tape, paint, structure, strong, weak, square, rectangle, triangle, star, zigzag, spotty, stripy, side, edge, surface, on top of, underneath, smaller than, symmetrical, beside, next to	needle, thread, ruler, tape, measure , outline, background, mask, strengthen, stitch, quality, pattern repeat, centre, side, line, flat, symmetry, turn				moving, handle, lever, pivot, pull, push, slider, direction, blade, metal, balance, movement, forward, backwards, order, sequence, length
KS1 Years A & B revisited objectives	• Cut, peel or grate ingredients safely and hygienically. • Measure or weigh using measuring cups or electronic scales. • Assemble or cook ingredients. • Cut materials safely using tools provided. • Measure and mark out to the nearest centimetre. • Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling). • Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen). • Shape textiles using templates. • Join textiles using running stitch. • Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing). • Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products. • Design products that have a clear purpose and an intended user. • Make products, refining the design as work progresses. • Use software to design. • Explore objects and designs to identify likes and dislikes of the designs. • Suggest improvements to existing designs. • Explore how products have been created.					

KS2 Year A	How can we use more sustainable materials for future design (making a fabric shopping bag)	How can I use mechanical systems in my design? (K'nex Challenge through setpoint)	How much money can I make from a fiver? Young enterprise Fiver Challenge designing a stall for the school summer fair (food) What can we grow in our allotment?
	evaluate, design, **research**, **make,** criteria, develop, prototype, sustainable, aesthetic, cut, join ,sketch, textiles	**design, evaluate, construct,** plan, mechanical, gears pulleys, cams, levers, circuit, motors, join, improve	**research, evaluate, analyse,** product, generate, communicate, experiment, grow, maintain diet healthy, seasonality
KS2 Year B	How does the food eaten in Italy today compare with that eaten in Roman times? (making pizzas)	Can I construct and programme a robot? (Lego Robotics through Setpoint)	How much money can I make from a fiver? Young enterprise Fiver Challenge designing a stall for the school summer fair (textile) What can we grow in our allotment?
	research, prepare, **design,** cook, **investigate,** recipe, taste, experiment, **evaluate,** ingredient,	computing, programme, monitor, control, product, **construct,** improve	**research, evaluate, analyse,** product, generate, communicate, experiment, grow, maintain diet healthy, seasonality
KS2 Year C	What is a Kente cloth strip? (African weaving)	How can I use mechanical systems in my design? (K'nex Challenge through setpoint)	How much money can I make from a fiver? Young enterprise Fiver Challenge designing a stall for the school summer fair (food) What can we grow in our allotment?
	research, investigate, analyse, design, make, cut, shape, join, finish, accurately, textile, asthetic	**design, evaluate, construct,** plan, mechanical, gears pulleys, cams, levers, circuit, motors, join, improve	**research, evaluate, analyse,** product, generate, communicate, experiment, grow, maintain diet healthy, seasonality
KS2 Year D	Why did children from Tonwell School spend so much time picking blackberries? (making jam/jam tarts)	Can I construct and programme a robot? (Lego Robotics through Setpoint)	How much money can I make from a fiver? Young enterprise Fiver Challenge designing a stall for the school summer fair (textile) What can we grow in our allotment?
	prepare, cook, sweet, savoury, cooking, technique, seasonality, taste, sour, sharp	computing, programme, monitor, control, product, **construct,** improve	**research, evaluate, analyse,** product, generate, communicate, experiment, grow, maintain diet healthy, seasonality
KS2 Years A, B, C & D	• Prepare ingredients hygienically using appropriate utensils. • Measure ingredients to the nearest gram accurately. • Follow a recipe.	• Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms).	

revisited objectives	• Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking). • Cut materials accurately and safely by selecting appropriate tools. • Measure and mark out to the nearest millimetre. • Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs). • Select appropriate joining techniques. • Join textiles with appropriate stitching. • Select the most appropriate techniques to decorate textiles. • Choose suitable techniques to construct products or to repair items. • Strengthen materials using suitable techniques. • Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears). • Design with purpose by identifying opportunities to design. • Make products by working efficiently (such as by carefully selecting materials). • Refine work and techniques as work progresses, continually evaluating the product design. • Use software to design and represent product designs. • Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs. • Improve upon existing designs, giving reasons for choices.	• Measure accurately and calculate ratios of ingredients to scale up or down from a recipe. • Demonstrate a range of baking and cooking techniques. • Create and refine recipes, including ingredients, methods, cooking times and temperatures. • Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape). • Show an understanding of the qualities of materials to choose appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper). • Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration). • Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (such as a soft decoration for comfort on a cushion). • Write code to control and monitor models or products.(Setpoint Lego Robotics) • Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding). • Design with the user in mind, motivated by the service a product will offer (rather than simply for profit). • Make products through stages of prototypes, making continual refinements. • Ensure products have a high quality finish, using art skills where appropriate. • Evaluate the design of products so as to suggest improvements to the user experience.

Design and technology Skills Ladder

The purpose of the skills ladder is to break down the revisited objectives to show the expectation for each year group. This is not to limit what children can achieve but to give guidance to staff to support short term planning and implementation of the intent document.

Nursery/Reception	22-36 months	30-50 months	40-60 months	ELG
	Are curious and interested in making things happen.	Investigate various construction materials. Realise tools can be used for a purpose. Join construction pieces together to build and balance. Begin to try out a range of tools and techniques safely.	Construct with a purpose in mind, using a variety of resources. Use simple tools and techniques competently and appropriately.	Builds and constructs with a wide range of objects, selecting appropriate resources, tools and techniques and adapting their work where necessary. Ask questions about why things happen and how things work.

Year group	Developing, planning and communicating ideas	Working with tools, equipment, materials and components to make quality products (including food)	Evaluating processes and products
Year 1	Draw on own experiences to help generate ideas. Suggest ideas and explain what they are going to do. Identify a target group for what they intend to design and make. Model their ideas in card and paper. Develop their design ideas applying findings from their earlier research.	Make their design using appropriate techniques. With help measure, mark out, cut and shape a range of materials. Use tools e.g scissors and a hole punch safely. Assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape. Select and use appropriate fruit and vegetables, processes and tools.	Evaluate their product by discussing how well it works in relation to the purpose. Evaluate their products as they are developed, identifying strengths and possible changes they might make. Evaluate their product by asking questions about what they have made and how they have gone about it.

		Use basic food handling, hygienic practices and personal hygiene. Use simple finishing techniques to improve the appearance of their product	
Year 2	Generate their own and other people's experiences. Develop their design ideas through discussion, observation, drawing and modelling. Identify a purpose for what they intend to design and make. Identify simple design criteria. Make simple drawings and label parts.	Begin to select tools and materials; use vocab' to name and describe them. Measure cut and score with some accuracy. Use hand tools safely and appropriately. Assemble, join and combine materials in order to make a product. Cut, shape and join fabric to make a simple garment. Use basic sewing techniques. Follow safe procedures for food safety and hygiene. Choose and use appropriate finishing techniques	Evaluate against their design criteria. Evaluate their products as they are developed, identifying strengths and possible changes they might make. Talk about their ideas, saying what they like and dislike about them.
Year 3	Generate ideas for an item considering its purpose and the user/s. Identify a purpose and establish criteria for a successful product. Plan the order of their work before starting. Explore, develop and communicate design proposals by modelling ideas. Make drawings with labels when designing.	Select tools and techniques for making their product. Measure, mark out, cut, score and assemble components with more accuracy. Work safely and accurately with a range of simple tools. Think about their ideas as they make progress and be willing change things if this helps them improve their work. Measure, tape or pin, cut and join fabric with some accuracy. Demonstrate hygienic food preparation and storage.	Evaluate their product against original design criteria e.g. how well it meets its intended purpose. Disassemble and evaluate familiar products.

		Use finishing techniques strengthen and improve the appearance of their product using a range of equipment including ICT.	
Year 4	Generate ideas considering the purposes for which they are designing. Make labelled drawings from different views showing specific features. Develop a clear idea of what must be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail. Evaluate products and identify criteria that can be used for their own designs	Select appropriate tools and techniques for making their product. Measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques. Join and combine materials and components accurately in temporary and permanent ways. Sew using a range of different stitches, weave and knit. Measure, tape or pin, cut and join fabric with some accuracy. Use simple graphical communication techniques.	Evaluate their work both during and at the end of the assignment. Evaluate their products carrying out appropriate tests.
Year 5	Generate ideas through brainstorming and identify a purpose for their product. Draw up a specification for their design. Develop a clear idea of what must be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail. Use results of investigations, information sources, including	Select appropriate materials, tools and techniques. Measure and mark out accurately. Use skills in using different tools and equipment safely and accurately Weigh and measure accurately (time, dry ingredients, liquids). Apply the rules for basic food hygiene and other safe practices e.g. hazards relating to the use of ovens. Cut and join with accuracy to ensure a good-quality finish to the product.	Evaluate a product against the original design specification. Evaluate it personally and seek evaluation from others.

	ICT when developing design ideas.		
Year 6	Communicate their ideas through detailed labelled drawings. Develop a design specification. Explore, develop and communicate aspects of their design proposals by modelling their ideas in a variety of ways. Plan the order of their work, choosing appropriate materials, tools and techniques.	Select appropriate tools, materials, components and techniques. Assemble components make working models. Use tools safely and accurately Construct products using permanent joining techniques. Make modifications as they go along. Pin, sew and stitch materials together create a product. Achieve a quality product.	Evaluate their products identifying strengths and areas for development and carrying out appropriate tests. Record their evaluations using drawings with labels. Evaluate against their original criteria and suggest ways that their product could be improve.